

**DENTAL HYGIENISTS' VIEWS ON ORAL CANCER CONTROL
IN NORTH CAROLINA**

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ABSTRACT

Carrie Bigelow: Dental Hygienists Views on Oral Cancer Control in North Carolina (Under the direction of Dr. Lauren L. Patton)

The purpose of this study was to assess North Carolina dental hygienists' views regarding oral and pharyngeal cancer (OPC) prevention and early detection. Four major themes arose from two, eight member focus groups: 1) The charge of the dental hygienist is to recognize abnormalities and initiate referral when necessary; 2) The dental hygienist is only helpful with tobacco cessation if the patient has a desire to quit; 3) The dental hygienist is most effective if the patient believes the provider truly cares about the patient's well-being; and 4) There is always a need for continued education in oral cancer screenings and tobacco cessation, specifically for hands-on courses. Barriers to performing OPC exams include: financial, time, and insufficient dentist support. Barriers to tobacco cessation include: lack of patient interest, education materials and resources; smoking parents of adolescents; personality issues and provider-patient diversity. Barriers need to be addressed to improve oral cancer control efforts.

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LIST OF ABBREVIATIONS

OPC: Oral and Pharyngeal Cancer

SCC: Squamous Cell Carcinoma

NIH: National Institutes of Health

NC: North Carolina

UNC: University of North Carolina

CE: Continuing Education

INTRODUCTION

According to cancer statistics, more than 34,000 people are diagnosed with oral and pharyngeal cancer (OPC) each year in the United States, and an estimated 1 out of every 4 of these cases will result in death.^{1, 2} OPC traditionally accounts for malignant tumors of the lips, tongue, floor of the mouth, palate, gingiva, alveolar mucosa, buccal mucosa, and oropharynx. The most common site of occurrence is the tongue followed by the lip and the floor of the mouth, with the most common type being squamous cell carcinoma.³ This disease affects more males than females with a male: female ratio of over 2:1. However, the difference between men and women is becoming less pronounced possibly explained by more women exposing themselves to known risk factors such as alcohol and tobacco.⁴ OPC is more common among middle age to elderly people with the median age of diagnosis being 64 years.¹

The 5-year survival rate among OPC patients, approximately 50-60%^{2, 4} is among the lowest of all cancers. Unfortunately, the 5-year survival rate is even lower for African Americans with 34% for males and 52% for females versus 61% for white males and 63% for white females.^{1, 5, 6} The most often stated reason for poor survival is that oral cancers are usually diagnosed at an advanced stage.⁷ When undetected, OPC lesions can spread to adjacent organs, tissues, cervical lymph nodes and distant sites in the body.³

OPC is detectable in its early stages with visual and tactile examinations of the head, neck and oral cavity, and is treatable with surgery and/or radiation therapy, with or

without concomitant chemotherapy. Oral cancer screenings can reduce the incidence of invasive lesions. If all OPC cases were diagnosed early, and treated as localized tumors, it is estimated that almost 4 out of 5 patients would survive 5 years.³

OPC is not only detectable in the early stages, but it is preventable when key risk factors are controlled. The primary risk factors include the use of tobacco and alcohol which independently increase a person's risk.³ However, when used simultaneously, a person's risk increases significantly.⁸ Blot and colleagues found a 35-fold increased risk for persons who smoked two or more packs of cigarettes a day and consumed more than four alcoholic drinks per day as compared to abstainers.⁸ Other factors include sun exposure without protection, a diet lacking in fruits and vegetables,³ and more recently, human papilloma virus has been suggested to increase a person's risk of OPC.^{9, 10}

The second stated goal in *Healthy People 2010* is: "to eliminate health disparities", and in section 3-6 the report specifically states a goal to reduce the mortality rates associated with oral cancer.¹¹ In the Surgeon General's report, *Oral Health in America: A Report of the Surgeon General*, the Department of Health and Human Services points to a need to improve the oral health of Americans and eliminate health disparities.¹² However, despite our growing knowledge of risk factors and methods of early detection, the United States has shown little improvement over the last three decades in the area of early detection of localized OPC tumors.^{1, 3}

The state of North Carolina (NC) has a continuing high OPC rate with 10.3 per 100,000 population.¹³ In the year 2005, 905 new cases of OPC and 225 deaths were projected to occur.^{14, 15} North Carolina's age adjusted OPC 5-year mortality rate ranks 13th among all states.¹ As with most cancers, the burden of OPC is unequal across the

population and is partially determined by life circumstances, e.g. social position, economic status, culture, and environment.⁷ As one of the leading tobacco producers in the nation, North Carolina's percentages of adult smokers in 2004 (22.5%) rated higher than the national percentage (20.5%),¹⁶ making it a state of particular concern when it comes to risk factors for oral cancer.

Early detection of oral and pharyngeal squamous cell carcinomas during non-symptom driven screening examinations are associated with appropriate treatment and lower mortality rates.¹⁷ Many dentists and dental hygienists report the performance of routine OPC examinations. However, several studies show that these health-care professionals also report inadequacies in their level of knowledge regarding OPC and in the examination process.¹⁸⁻²⁹

Oral healthcare professionals are in a unique role to provide counseling in relation to risk factors such as tobacco and alcohol use. Fifty percent of adult smokers and 75% of adolescent smokers are reported to see a dentist at least once a year.³⁰ Tobacco cessation counseling associated with provider to patient contact is consistently effective.

Approximately 40% of smokers try to quit in response to a healthcare provider's advice,³¹ and interventions by dental practitioners have reported cessation rates of up to 18%.^{32, 33} Furthermore, the effectiveness of these interventions increases with the amount of time spent counseling with the patient.³⁴ However, as with OPC screenings, oral healthcare providers correctly identify tobacco and alcohol use as risk factors, but find several barriers in providing cessation counseling.^{26, 28, 29}

In the year 2001, Patton and colleagues began to examine the epidemiology of oral cancer in North Carolina in order to assess the level of need for education as well as

the target audience for oral cancer prevention and early detection information.⁷ Their studies assessing knowledge related to risk factors and screenings for OPC included surveys of NC adults, dentists, dental hygienists, family physicians, and nurse practitioners.^{26, 27, 29, 35, 36} These surveys revealed gaps not only in the knowledge level among NC adults,³⁵ but they also exposed deficiencies in NC medical and dental providers' (both dentists' and dental hygienists') knowledge and practice levels regarding the control of OPC.^{26, 27, 29, 36}

The purpose of this qualitative study was to identify further insight behind the quantitative data gathered from these surveys. Specifically, to gather data that might compliment the responses given by NC dental hygienists, regarding their knowledge, opinions, and practices related to oral cancer prevention and early detection. In addition, this study explored patient related factors, specifically tobacco use, that can influence prevention and early detection of oral cancer. The information gained from this study is intended to contribute to the development of a state model for promoting oral cancer awareness, prevention, and early detection that is consistent with the recommendations of the recent "National Strategic Planning Conference for the Prevention and Control of Oral and Pharyngeal Cancer".⁷

REVIEW OF THE LITERATURE

Oral Cancer

Cancer is a disease that begins in the cells. Cells divide and form new cells as the body needs them, and the old cells die. Occasionally this process goes awry. The body begins forming new cells, but the old cells do not die forming a mass of unneeded tissue called a tumor. There are two types of tumors: benign and malignant. Benign tumors are not considered cancer. They are rarely life-threatening and can be removed without a threat of re-growth. Malignant tumors, on the other hand, are considered cancer and can be life threatening. They can also be removed, but often reform. These tumors can attack and damage the surrounding tissues and organs, as well as break away from the original cancer, enter the bloodstream and/or lymphatic system and spread to other parts of the body forming new tumors. This spread of malignant tumors is called metastasis.³⁷

In 2007, over 34,000 people in the United States are expected to be diagnosed with OPC which accounts for malignant tumors of the lip, oral cavity, and pharynx.² The most common sites for OPC cancers are the tongue followed by the lip and the floor of the mouth.³ Almost all oral cancers begin in the flat epithelial cells or *squamous cells* that cover the surfaces of the mouth, tongue and lips.³⁷ Accounting for over 90% of OPC cases, *squamous cell carcinoma* is the most common type of lesion among OPC cancers.^{2, 3}

When oral cancer metastasizes, it usually travels through the lymphatic system often appearing first in the lymph nodes of the neck. OPC cells can then spread to additional parts of the neck, the lungs, and other regions of the body.³⁷

Risk Factors and Prevention

There are several risk factors that have been shown to be associated with OPC. Some of these include: tobacco and alcohol use;^{8, 38, 39} over-exposure to the sun;⁴⁰ a diet low in fruits and vegetables;⁴¹⁻⁴³ and even some viral infections such as Human Papilloma Virus and Epstein-Barr Virus have been shown to increase a person's risk.^{9, 10, 43-45}

The two most important risk factors, and perhaps the most controllable are tobacco and alcohol use. The role of tobacco and alcohol in the etiology of oral cancer has been well established. Specifically, in 1986 and 1988, expert working groups of the International Agency for Research on Cancer (IARC), reviewed animal and human studies of the carcinogenic risk of tobacco smoking and alcohol drinking, and concluded that these two exposures are causally related to cancers of the oral cavity and pharynx.^{46, 47}

Approximately 80% of oral cancer patients smoke, and treated OPC patients who continue to smoke have a 2-6 times greater chance of developing a second malignancy.^{3, 48} In addition to smoking cigarettes, cigars, and pipes; chewing tobacco, dipping snuff, the use of chewing substitutes such as betel nut quid and pan masala (common in Middle and Far Eastern countries), place an individual at high risk to develop OPC.^{37, 49} Heavy smokers and those who use tobacco over a long period of time are at especially high risk, but even their risk can increase with the consumption of alcohol.³⁷ In studies controlled

for smoking, moderate to heavy drinkers can have a 3-9% greater chance of developing a malignancy.⁵⁰⁻⁵² However, of particular concern is the synergistic effect between alcohol and tobacco use which in some studies gives the individual over a 100 times higher likelihood of developing OPC compared to abstainers.^{8, 53}

Results from several studies exhibit a general lack of knowledge regarding OPC risk factors among adults.^{35, 54-56} Greater efforts are needed in primary prevention of OPC which includes the avoidance of tobacco and alcohol abuse. Patients need to be informed of the risks and educated on lifestyle changes that will help prevent and control morbidity rates related to OPC.

Dental professionals are in a unique role to provide risk factor counseling regarding the prevention of OPC, specifically, counseling related to tobacco and alcohol use. Patients visiting the dental office for problem-oriented appointments are often streamlined into a regular preventive recall schedule where they are seen for preventive services on a regular basis. OPC risk factor counseling can be added to these preventive services, and potentially can be a life saving element of care.^{57, 58}

Randomized controlled trials show that with tobacco, brief interventions can be successful in reducing tobacco use and dental clinical teams can be effective in this process.^{32, 59-63} A recent meta-analysis of 37 randomized clinical trials and quasi-experiments found that smoking-cessation advice from any type of healthcare provider results in increases in quit rates,⁶⁰ and another study showed that 40% of smokers try to quit in response to a healthcare provider's advice.³¹ Tobacco-use interventions by oral health professionals have reported achieving cessation rates of up to 18%.^{32, 33}

A survey of dentists in a managed care setting revealed that dentists' perceptions regarding success in helping patients quit using tobacco was highly correlated with the percentage of tobacco-using patients who were asked about tobacco use, the frequency with which they were given advice, and the average time spent counseling with a patient.⁶⁴ However, the authors were quick to caution that these results should not be generalized to outside populations because the particular group of dentists which participated in this study was not representative of other populations. In addition, the relatively low response rate may indicate a resistance to the incorporation of tobacco cessation into dental health professionals' daily practice regimes.⁶⁴ Though dental professionals are aware of the risks associated with tobacco and alcohol use, they often feel ill-prepared or uncomfortable presenting patients with a clear cessation message.^{28, 57,}

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Early Detection

In addition to controlling risk factors, one of the greatest opportunities to improve mortality rates for OPC is early detection. More than 80% of lesions detected in stages I and II can be cured with appropriate treatment. Unfortunately, almost two-thirds of OPC lesions are diagnosed in stages III and IV, requiring more aggressive treatment and still resulting in poor survival rates.^{65, 66}

OPC can present itself in precancerous stages, such as erythroplakia (red patch), leukoplakia (white patch) and/or erythroleukoplakia (mixed red and white patches), all of which can become malignant and can be detected upon visual examination.⁴⁹ These premalignant lesions of the oral mucosa are amenable to larger scale screening

opportunities prior to their transformation to malignant lesions. Other warning signs and symptoms suggesting the possibility of oral cancer may include:³⁷

- A sore on the lip or in the mouth that won't heal
- Bleeding in the mouth
- Loose teeth
- Difficulty or pain when swallowing
- Difficulty wearing dentures
- A lump in the neck
- An earache

Most often these symptoms do not mean oral cancer is present. However, all should be observed by a dentist or physician so that in the case of oral cancer, chances of survival can be improved by early detection and treatment.³⁷

Early detection depends on a thorough and a perceptive clinician or even a patient who might identify an abnormality in the mouth, neck and or surrounding areas. A study done by Holmes *et al*, interviewed 51 patients with newly diagnosed OPC to determine detection patterns and whether recognition of these cancers by various healthcare providers was associated with a lower stage at diagnosis.¹⁷ In this study, all lesions detected by physicians occurred during a symptom-driven examination. Dentists, dental hygienists, oral and maxillofacial surgeons, and in one case, a denturist were more likely to detect OPC during non-symptom driven examinations, and the lesions detected during non-symptom driven exams were of a statistically significant lower average clinical and pathologic stage (1.7 and 1.6, respectively) than lesions detected during a symptom-directed examination (2.6 and 2.5, respectively). Additionally, patients who sought care

from a regional specialist (dentist, oral and maxillofacial surgeon, or otolaryngologist) with symptoms related to their lesion were more likely to have appropriate treatment initiated than those who initially sought care from their primary care physician. Finally, the study found that the dental office was the most likely source of detection of a lesion during a screening exam. Patients referred from a dental office were of significantly lower stage than those referred from a medical office.¹⁷

A review completed by the Cochrane Collaboration entitled, *Screening programmes for the early detection and prevention of oral cancer*,⁶⁷ evaluated a study by Sankaranarayanan *et al* which discussed the efficacy of OPC visual screenings on oral cancer control.^{67,68} The purpose of this 9-year randomized controlled trial was to determine if visual screening had an effect on OPC mortality rates.⁶⁸ Thirteen clusters involving 191,872 individuals were chosen for the study, seven were randomized to three rounds of oral visual inspection by trained health care workers at 3-year intervals and six to a control group during 1996–2004, in Kerala, India.⁶⁸ Healthy participants aged 35 years and older were eligible for the study. Patients testing positive during screening procedures were referred for clinical examination by doctors, biopsy, and treatment. Outcome measures were survival, case fatality, and oral cancer mortality.

Over the 9-year period, there were 164 oral cancer deaths. The 21% reduction in oral cancer mortality in all individuals in the intervention-screened group (77 out of 205 subjects with oral cancer) compared with controls (87 out of 158 subjects with oral cancer) was not significant. However, a significant 34% reduction in mortality was recorded in the high-risk group (tobacco or alcohol users) in the screening arm compared

with controls. Additional statistical analyses performed by the Cochrane Collaboration review authors examined survival rates from Sankaranarayanan *et al*'s published data. The proportions of patients still alive, 5 years after diagnosis were compared among the control and intervention groups. A significantly higher 5-year survival rate (50%) was reported in the intervention group than in the control group (34%).⁶⁷

The authors concluded that oral visual screenings can reduce mortality in high-risk individuals and have the potential to prevent at least 37,000 cancer deaths worldwide.⁶⁸ In the Cochrane review, while Kujan *et al* also concluded that this study showed a significant difference in mortality rates between the intervention and control groups for high-risk patients, they also stated that there is insufficient evidence to support or refute the use of a visual examination as a method of screening for oral cancer in the general population.⁶⁷ More studies are needed in order to confirm the data from Sankaranarayanan *et al*'s study. In the meantime, since screening by visual examination might be effective in the early detection of OPC, the suggestion of the Cochrane Collaboration review authors was that systematic examination of the oral cavity by dental healthcare professionals should remain an integral part of their routine daily work.⁶⁷

Dental Hygienists Opinions and Practices Regarding OPC Control

Surveys of dental healthcare professionals reveal gaps in their practices of oral cancer screening as well as alcohol and tobacco use cessation counseling.¹⁸⁻²⁹ A study conducted by Horowitz *et al* used focus groups of dental hygienists and revealed a wide variety of practices regarding OPC screenings and patient education activities.²⁰ Dental hygienists in this study were candid about their belief that dentists and dental hygienists

need to be more attentive in providing oral cancer examinations on a routine basis. Unfortunately, the results of this study as well as a previous survey of Maryland dental hygienists^{22, 23} revealed rationales for why they are not providing screenings and assessments. Many hygienists did not feel they had time to provide such exams. In addition, some did not provide them because it was not expected of them by their employer. Perhaps even more compelling, was that several of the study participants felt uncomfortable or unsure about exactly how to provide a comprehensive examination.^{20, 22, 23} Regarding assessment of risk factors, many of the focus group participants said they do conduct fairly comprehensive health assessments, which includes evaluating the patient's tobacco use, but they thought more needed to be done to educate patients regarding oral cancer control.²⁰

A similar study conducted by Ashe *et al* sought to determine the opinions and practices of North Carolina dental hygienists regarding OPC control.²⁶⁻²⁷ Over 90% were assessing their patients' tobacco use, however, only 58% were addressing their patients' alcohol use. While the majority of the respondents agreed or strongly agreed that hygienists should be trained to provide cessation counseling, few felt adequately trained to do so. Regarding OPC screenings, the dental hygienists from this study answered contrary to the Maryland survey^{22, 23} in that NC dental hygienists felt comfortable in providing OPC screening exams, and even felt confident in their abilities to detect abnormalities that may be precancerous. However, they agreed with Maryland dental hygienists regarding the need for more CE courses and/or formal training regarding oral cancer control education. Finally, this survey found that only 10% reported attending CE courses on the topic, while 96% expressed interest in attending such courses.²⁷ The

response rate for both the Maryland^{22, 23} and NC surveys^{26, 27} was approximately 60%. One could consider that dental hygienists responding to these surveys may have a higher knowledge and confidence level in the subject. In contrast, the non-responders may have little knowledge and/or interest regarding oral cancer and inadequate training in OPC control, which may have influenced their decision to not respond. Therefore, these surveys may over-represent dental hygienists' knowledge and training regarding the early detection and prevention of OPC.²⁶

In 2005, Cruz *et al* conducted the first survey to assess alcohol abuse cessation practices among a population-based sample of oral healthcare workers in New York.²⁸ Their findings were similar to those in Maryland and NC with regards to OPC screenings and tobacco cessation counseling. In terms of alcohol abuse counseling, they reported 17% of dental hygienists were asking patients about alcohol use; 12% advised heavy alcohol users to reduce use; 7% assessed their patients' willingness to reduce use; and only 2% and 1% of the dental hygienists assisted their patients who were heavy alcohol users in developing an alcohol-use reduction plan and arranging for a follow-up contact, respectively. Finally, in terms of readiness to assist heavy alcohol users in developing an alcohol-use reduction plan, only 4% of dental hygienists were assisting more than 80% of their alcohol-abusing patients to reduce use for more than 6 months.²⁸

The Role of the Dental Hygienist

Dental hygienists are known for their role in the prevention of oral diseases. They are in a unique position not only to detect oral pre-cancerous and cancerous lesions, but also to counsel and educate patients to avoid known risk factors that could cause oral

cancer. Holmes *et al.* assessed detection practices of OPC and concluded that appropriate treatment and lower stage at diagnosis were most often associated with a non-symptom driven examination which was most likely to occur in a dental office.¹⁷ Dental hygienists may not think of themselves as “life-savers”, but in detecting a pre-cancerous lesion or even a malignant lesion in the early stages and educating their patients of the signs and risk factors associated with oral cancer, they can influence mortality rates and help reduce the number of lives lost to OPC.

INTRODUCTION AND REVIEW OF THE LITERATURE

According to cancer statistics, more than 34,000 people are diagnosed with oral and pharyngeal cancer (OPC) in the United States each year. The five-year survival rate among OPC patients, approximately 50-60%^{2, 4}, is among the lowest of all cancers with an estimated 1 out of every 4 of these 34,000 cases resulting in death.^{1, 2}

The state of North Carolina has a continuing high OPC rate with 10.3 per 100,000 population.¹³ The age-adjusted OPC 5-year mortality rate ranks 13th among all states.¹ As with most cancers, the burden of OPC is unequal across the population and is partially determined by life circumstances, e.g. social position, economic status, culture, and environment.⁷ As one of the leading tobacco producers in the nation, North Carolina's percentages of adult smokers in 2004 (22.5%) rated higher than the national percentage (20.5%),¹⁶ making it a state of particular concern when it comes to risk factors for oral cancer.

In the year 2001, Patton and colleagues began to examine the epidemiology of oral cancer in North Carolina in order to assess the level of need for education as well as the target audience for oral cancer prevention and early detection information.^{7,13} Their studies assessing knowledge related to risk factors and screenings for OPC included surveys of NC adults, dentists, dental hygienists, family physicians, and nurse practitioners.^{26, 27, 29, 35, 36} These surveys revealed gaps not only in the knowledge level among NC adults,³⁵ but they also exposed deficiencies in NC medical and dental

providers' (both dentists' and dental hygienists') knowledge and practice levels regarding the control of OPC.^{26, 27, 29, 36} Dental hygienists are known for their role in the prevention of oral diseases. They are in a unique position not only to detect oral pre-cancerous and cancerous lesions, but also to counsel and educate patients to avoid known risk factors that could cause oral cancer.

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Oral Cancer

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The most common site of occurrence is the tongue followed by the lip and the floor of the mouth, with the most common type being squamous cell carcinoma.³ This

disease affects more males than females with a male: female ratio of over 2:1. However, the difference between men and women is becoming less pronounced possibly explained by more women exposing themselves to known risk factors such as alcohol and tobacco.⁴ OPC is more common among middle age to elderly people with the median age of diagnosis being 64 years.¹

The 5-year survival rate among OPC patients, approximately 50-60%^{2, 4}, is among the lowest of all cancers. When oral cancer metastasizes, it usually travels through the lymphatic system often appearing first in the lymph nodes of the neck. OPC cells can then spread to additional parts of the neck, the lungs, and other regions of the body.³⁷ Consequently, a common reason for poor survival is that oral cancers are usually diagnosed at an advanced stage after they have metastasized.⁷

Risk Factors and Prevention

OPC is preventable when certain key risk factors are controlled. Several risk factors have been shown to be associated with OPC. Some of these include: over-exposure to the sun;⁴⁰ a diet low in fruits and vegetables;⁴¹⁻⁴³ and even some viral infections such as Human Papilloma Virus and Epstein-Barr Virus have been suggested to increase a person's risk.^{9, 10, 43-45} However, the two most important risk factors, and perhaps the most controllable are tobacco and alcohol use.^{3, 8, 46-52}

The role of tobacco and alcohol in the etiology of oral cancer has been well established. Specifically, in 1986 and 1988, expert working groups of the International Agency for Research on Cancer (IARC), reviewed animal and human studies of the carcinogenic risk of tobacco smoking and alcohol drinking, and concluded that these two exposures are causally related to cancers of the oral cavity and pharynx.^{46, 47}

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Early Detection

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lesions are diagnosed in stages III and IV, requiring more aggressive treatment and still resulting in poor survival rates.^{65, 66}

OPC can present itself in precancerous stages, such as erythroplakia (red patch), leukoplakia (white patch) and/or erythroleukoplakia (mixed red and white patches), all of which can become malignant and can be detected upon visual examination.⁴⁹ These premalignant lesions of the oral mucosa are amenable to larger scale screening opportunities prior to their transformation to malignant lesions. Other warning signs and symptoms suggesting the possibility of oral cancer may include:³⁷

- A sore on the lip or in the mouth that won't heal
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Most often these symptoms do not mean oral cancer is present. However, all should be observed by a dentist or physician so that in the case of oral cancer, chances of survival can be improved by early detection and treatment.³⁷

Early detection depends on a thorough and a perceptive clinician or even a patient who might identify an abnormality in the mouth, neck and or surrounding areas. A study done by Holmes *et al*, interviewed 51 patients with newly diagnosed OPC to determine detection patterns and whether recognition of these cancers by various healthcare providers was associated with a lower stage at diagnosis.¹⁷ In this study, all lesions

detected by physicians occurred during a symptom-driven examination. Dentists, dental hygienists, oral and maxillofacial surgeons, and in one case, a denturist were more likely to detect OPC during non-symptom driven examinations, and the lesions detected during non-symptom driven exams were of a statistically significant lower average clinical and pathologic stage (1.7 and 1.6, respectively) than lesions detected during a symptom-directed examination (2.6 and 2.5, respectively). Additionally, patients who sought care from a regional specialist (dentist, oral and maxillofacial surgeon, or otolaryngologist) with symptoms related to their lesion were more likely to have appropriate treatment initiated than those who initially sought care from their primary care physician. Finally, the study found that the dental office was the most likely source of detection of a lesion during a screening exam. Patients referred from a dental office were of significantly lower stage than those referred from a medical office.¹⁷

A review completed by the Cochrane Collaboration entitled, *Screening programmes for the early detection and prevention of oral cancer*,⁶⁷ evaluated a study by Sankaranarayanan *et al* which discussed the efficacy of OPC visual screenings on oral cancer control.^{67,68} The purpose of this 9-year randomized controlled trial was to determine if visual screening had an effect on OPC mortality rates.⁶⁸ Thirteen clusters involving 191,872 individuals were chosen for the study, seven were randomized to three rounds of oral visual inspection by trained health care workers at 3-year intervals and six to a control group during 1996–2004, in Kerala, India.⁶⁸ Healthy participants aged 35 years and older were eligible for the study. Patients testing positive during screening procedures were referred for clinical examination by doctors, biopsy, and treatment. Outcome measures were survival, case fatality, and oral cancer mortality.

Over the 9-year period, there were 164 oral cancer deaths. The 21% reduction in oral cancer mortality in all individuals in the intervention-screened group (77 out of 205 subjects with oral cancer) compared with controls (87 out of 158 subjects with oral cancer) was not significant. However, a significant 34% reduction in mortality was recorded in the high-risk group (tobacco or alcohol users) in the screening arm compared with controls. Additional statistical analyses performed by the Cochrane Collaboration review authors examined survival rates from Sankaranarayanan *et al*'s published data. The proportions of patients still alive, 5 years after diagnosis were compared among the control and intervention groups. A significantly higher 5-year survival rate (50%) was reported in the intervention group than in the control group (34%).⁶⁷

The authors concluded that oral visual screenings can reduce mortality in high-risk individuals and have the potential to prevent at least 37,000 cancer deaths worldwide.⁶⁸ In the Cochrane review, while Kujan *et al* also concluded that this study showed a significant difference in mortality rates between the intervention and control groups for high-risk patients, they also stated that there is insufficient evidence to support or refute the use of a visual examination as a method of screening for oral cancer in the general population.⁶⁷ More studies are needed in order to confirm the data from Sankaranarayanan *et al*'s study. In the meantime, since screening by visual examination might be effective in the early detection of OPC, the suggestion of the Cochrane Collaboration review authors was that systematic examination of the oral cavity by dental healthcare professionals should remain an integral part of their routine daily work.⁶⁷

Dental Hygienists Opinions and Practices Regarding OPC Control

Surveys of dental healthcare professionals reveal gaps in their practices of oral cancer screening as well as alcohol and tobacco use cessation counseling.¹⁸⁻²⁹ A study conducted by Horowitz *et al* used focus groups of dental hygienists and revealed a wide variety of practices regarding OPC screenings and patient education activities.²⁰ Dental hygienists in this study were candid about their belief that dentists and dental hygienists need to be more attentive in providing oral cancer examinations on a routine basis. Unfortunately, the results of this study as well as a previous survey of Maryland dental hygienists^{22, 23} revealed rationales for why they are not providing screenings and assessments. Many hygienists did not feel they had time to provide such exams. In addition, some did not provide them because it was not expected of them by their employer. Perhaps even more compelling, was that several of the study participants felt uncomfortable or unsure about exactly how to provide a comprehensive examination.^{20, 22, 23} Regarding assessment of risk factors, many of the focus group participants said they do conduct fairly comprehensive health assessments, which includes evaluating the patient's tobacco use, but they thought more needed to be done to educate patients regarding oral cancer control.²⁰

A similar study conducted by Ashe *et al* sought to determine the opinions and practices of North Carolina dental hygienists regarding OPC control.²⁶⁻²⁷ Over 90% were assessing their patients' tobacco use, however, only 58% were addressing their patients' alcohol use. While the majority of the respondents agreed or strongly agreed that hygienists should be trained to provide cessation counseling, few felt adequately trained to do so. Regarding OPC screenings, the dental hygienists from this study answered contrary to the Maryland survey^{22, 23} in that NC dental hygienists felt comfortable in

providing OPC screening exams, and even felt confident in their abilities to detect abnormalities that may be precancerous. However, they agreed with Maryland dental hygienists regarding the need for more CE courses and/or formal training regarding oral cancer control education. Finally, this survey found that only 10% reported attending CE courses on the topic, while 96% expressed interest in attending such courses.²⁷ The response rate for both the Maryland^{22, 23} and NC surveys^{26, 27} was approximately 60%. One could consider that dental hygienists responding to these surveys may have a higher knowledge and confidence level in the subject. In contrast, the non-responders may have little knowledge and/or interest regarding oral cancer and inadequate training in OPC control, which may have influenced their decision to not respond. Therefore, these surveys may over-represent dental hygienists' knowledge and training regarding the early detection and prevention of OPC.²⁶

In 2005, Cruz *et al* conducted the first survey to assess alcohol abuse cessation practices among a population-based sample of oral healthcare workers in New York.²⁸ Their findings were similar to those in Maryland and NC with regards to OPC screenings and tobacco cessation counseling. In terms of alcohol abuse counseling, they reported 17% of dental hygienists were asking patients about alcohol use; 12% advised heavy alcohol users to reduce use; 7% assessed their patients' willingness to reduce use; and only 2% and 1% of the dental hygienists assisted their patients who were heavy alcohol users in developing an alcohol-use reduction plan and arranging for a follow-up contact, respectively. Finally, in terms of readiness to assist heavy alcohol users in developing an alcohol-use reduction plan, only 4% of dental hygienists were assisting more than 80% of their alcohol-abusing patients to reduce use for more than 6 months.²⁸

The Role of the Dental Hygienist

Dental hygienists are known for their role in the prevention of oral diseases. They are in a unique position not only to detect oral pre-cancerous and cancerous lesions, but also to counsel and educate patients to avoid known risk factors that could cause oral cancer. Holmes *et al.* assessed detection practices of OPC and concluded that appropriate treatment and lower stage at diagnosis were most often associated with a non-symptom driven examination which was most likely to occur in a dental office.¹⁷ Dental hygienists may not think of themselves as “life-savers”, but in detecting a pre-cancerous lesion or even a malignant lesion in the early stages and educating their patients of the signs and risk factors associated with oral cancer, they can influence mortality rates and help reduce the number of lives lost to OPC.

MATERIALS AND METHODS

Two focus groups of eight dental hygienists each were held during a 2006 annual dental hygiene continuing education (CE) course at the University of North Carolina (UNC) School of Dentistry. This project received approval by the UNC Institutional Review Board. Dental hygienists were recruited by emails and phone calls prior to the CE course by obtaining a list of registrants containing names, email addresses, mailing addresses, and phone numbers from the UNC CE office. Due to a limited response through emails and phone calls, on-site recruitment through announcements was used to obtain a sample of eight hygienists for each focus group.

The focus group sessions took place in a classroom setting at the UNC School of Dentistry. However, as opposed to a traditional classroom seating arrangement, participants were seated in a round table fashion with the facilitator (C.B.) and note-taker (L.P.) sitting within the circle. Sessions were recorded using cassette tapes and two recorders with one being attached to a microphone. Recorders were placed in the center of the table to allow for maximum capture of all participants' voices which were transcribed at a later time.

The first session was held Thursday evening following lectures entitled: "The Dental Hygienist's Role in Tobacco Cessation" and "Recognizing Pathological Lesions Masquerading as Periodontal Disease." The focus group lasted approximately 64

minutes. Dinner was provided for the participants, and they were reimbursed \$50 for their participation.

The second focus group was held during lunch on Friday following a lecture entitled: “Providing Culturally Competent Dental Hygiene Care”. Participants only had one hour between courses for lunch, and therefore the session lasted only 48 minutes. Lunch was included with the course, and the hygienists were again provided a \$50 incentive for their participation.

At the beginning of each focus group, background information on the project was provided and consent forms were reviewed, signed, and collected. Participants were then asked to go around the table and state their first name, the area of NC in which they lived, and why they decided to take part in the focus group. Eight prompt questions were then used along with some additional probing questions that addressed the dental hygienists’ perceptions, practices, and comfort levels associated with oral cancer risk factors, OPC screenings, and tobacco cessation.

Following the discussion questions, participants were asked to complete an exit questionnaire. The purpose of the questionnaire was to provide demographic information on the study population such as: number of years in practice, hours worked per week, graduation institution (2 year vs. 4 year), county in North Carolina in which the participant practiced, and the approximate percentage of the patients in their practice using tobacco. Only one out of the 16 dental hygienists did not complete the questionnaire. (Table 1)

Qualitative content analysis was used to generate major themes and barriers (Tables 2 and 3) that emerged from the discussion.⁶⁹ The moderator for the sessions

transcribed both session tapes, and then categorized quotes according to corresponding questions. A summary for each question was then written. Another research team member acted as the note taker during the focus group sessions and reviewed the transcripts along with the summaries. Subsequently, both the moderator and the note taker examined patterns which had emerged from the data to report major themes and barriers related to the participants' opinions, knowledge and practices regarding OPC screenings and tobacco cessation counseling.

RESULTS

The study population represented counties spread across North Carolina as illustrated in Figure 1. The dental hygienists participating in this study estimated that approximately 42% of their patients were using some form of tobacco. The participants ranged in years of practice from 2 to 35 years and the mean number of hours worked per week was 31.8. (Table 1) Ten of the dental hygienists graduated with an Associate Degree in dental hygiene, and five graduated with a Bachelors Degree.

The majority of the dental hygienists in both groups reported performing OPC exams on every patient, and these exams were being performed by both the dentist and the hygienist. In some situations, the dental hygienists reported that while the dentists were performing the screenings, it was mostly for new patients and selectively for those they felt were high risk as opposed to universally for every patient. In addition, they thought most dentists performed only an examination of the intra-oral mucosa, and it was unusual to find a dentist that performed an entire head and neck examination. A few of them even felt the dental hygienist was more likely to find something because, “they are going from corner to corner...whereas the dentist is probably going to only one area to work.”

Not all of the dental hygienists explained to the patients that they were doing an OPC screening. Some labeled it for new patients, but felt that recall patients already knew what they were doing. In fact, they noted that patients had recognized and asked,

“Oh, you’re doing an oral cancer screening, aren’t you?” One hygienist said she does not specifically label it, but tells the patient she is looking for abnormalities.

Many of the participants in both groups identified smoking, smokeless tobacco, alcohol use, and sun exposure as risk factors. The second group seemed to associate risk factors more with professions and gender than with the general population. Some associated dipping more with males than females due to sports, specifically golf and hockey. However, in the first group, there was a general consensus that every patient could be at risk for oral cancer, even without exposure to commonly accepted risk factors. Several of the dental hygienists even shared personal experiences with patients who had developed oral cancer without known risk factors for the disease.

Four major themes emerged from the discussions. They included

1. The charge of the dental hygienist was not necessarily to diagnose cancer, but to recognize abnormalities and initiate referral when necessary.
2. The dental hygienist is only helpful in the tobacco cessation process if the patient has a desire to quit.
3. The dental hygienist is most effective if the patient believes the provider is genuine and truly cares about the patient’s well-being.
4. There is a need for continuing education courses in oral cancer screenings and tobacco cessation, specifically hands-on courses.

Theme 1: The charge of the dental hygienist was not necessarily to diagnose cancer, but to recognize abnormalities.

While the majority reported that they were uncomfortable in their level of training in making a differential diagnosis for oral malignancy, several of the dental hygienists

relayed that their charge was merely to recognize normal from abnormal, and initiate a referral for differential diagnosis. Most of them felt confident that they could and were recognizing abnormalities in and around the mouth. A couple of the participants even noted that their comfort level was improved knowing that the dentist was also performing an oral cancer screening because, “two sets of eyes are better than one.”

When asked about the use of diagnostic tests such as Vizilite® (Zila Pharmaceuticals, Inc., Phoenix, AZ) and Oral CDx® brush biopsy (CDx Laboratories, Inc., Suffern, NY), many of them recognized that even if they were using these tests, this was a preliminary screening to help them determine whether or not the patient needed to be referred to a specialist to make a definitive diagnosis.

Some of their related comments included:

- “Most of the time we can tell when something doesn’t look right, and I think that is what our charge is.”
- “They’re taking that biopsy, and sending it to a lab and it’s the abnormal cell count that’s actually determining whether or not this is oral cancer. Because it could be a mole or a freckle in someone’s mouth and it’s nothing. Or it could be the total opposite. Nobody really knows without that structured lab test.”
- “I know normal from abnormal. With as many oral pathology classes as I’ve taken over the years, I wish I could identify something as being pre-cancerous as opposed to just being a red flag.”

- “But you’re the front source, you’re the front line. If you don’t send them to the oral surgeon they’re never going to have that biopsy.”

Theme 2: The dental hygienist is only helpful in the tobacco cessation process if the patient has a desire to quit.

Almost all of the participants agreed that only if the patient showed a desire to quit, would they provide counseling. Most of them believed that a patient will only quit when and if he or she “wants” to. One dental hygienist went a little further, and said she felt it was her responsibility to inform every patient of the risks of tobacco use, but again, if the patient showed no desire or willingness to try, she did not go any further. Only a couple of the participants stated specific situations where they would always counsel a patient to quit smoking. These included periodontal patients, patients undergoing implant treatment, and pregnant women. Comments about determining whether or not to provide counseling included:

- “It is an addiction...It’s really one of those things, if they don’t want to, there’s really nothing you can do for them.”
- “In my experience, Zyban® doesn’t even work if they don’t want to quit.”
- “If they come in and immediately confess, ‘I know I shouldn’t smoke’ you’ve got somebody that’s probably willing to listen.”

- “I used to be a smoker. I know what people used to say to me, and I smoked through school, and it was just one of those things until you are ready to quit...you will not.”

Theme 3: The dental hygienist is most effective if the patient believes the provider is genuine and truly cares about the patient’s well-being.

All of the dental hygienists felt one of the most important things they could do for their patient was show them that they were genuine and that they cared about their health. They felt this helped in communication with the patient. One dental hygienist discussed the importance of documentation of personal data as well as clinical data. Clinical data provides a basis for comparison at each appointment, and personal data provides reminders of who the patient is and helps the dental hygienist form a relationship with the individual. The participants reiterated that if there is a genuine relationship between patient and provider, the patient has more reason to listen to what the provider knows because, “they don’t care how much you know, until they know how much you care.” In expressing opinions regarding this theme, some of their statements were:

- “They’re not really going to have any trust in you, or your ability to do anything for them if they don’t even think that you know them.”
- “I think we’re one more healthcare provider that can iterate to the patients the problems that smoking will incur if they’re young...and that I care about you...I care about you as a person, as my patient, and I want you to come back for the next 20 years...”

- “When I was growing up my dental hygienist was my provider for about 8 years. I loved going there. It was just nice to know that she knew me...it makes it more comfortable. ”
- “You have to make them understand that you are not just concerned about their mouth. You know, communicate with the patient and let them know that yes we are concerned about your whole health and not just your teeth.”

Theme 4: There is a need for continuing education courses in oral cancer screening and tobacco cessation, specifically hands-on courses.

Almost all of the dental hygienists said there was always a need to refresh their knowledge level, and gave suggestions for the best methods of continuing education. Many of them felt just having the opportunity to talk with other dental hygienists and sharing ideas was helpful in improving their skills. Two dental hygienists from separate focus group sessions reported attending courses with local oral surgeons, and reported these courses to have been the most insightful and helpful courses related to the topic of early detection of oral cancer. The oral surgeons showed them “hands-on” techniques for what and how to palpate when performing an intra and extra oral screening exam. In addition, the oral surgeons had shown pictures of patients they had seen. Many of the participating dental hygienists suggested that the use of pictures to help them recognize lesions was helpful. Dental hygienists from the first focus group had attended an all day CE course on tobacco use, tobacco cessation, and recognizing pathological lesions. A

couple of these dental hygienists referred to the course and said the pictures were the most helpful aspect in improving their knowledge regarding pathological lesions.

In regards to tobacco cessation, most of the dental hygienists stated that their training had come largely from working experience as opposed to their formal education. The useful tool of discussions with other professionals was reiterated. They felt this provided examples of dialogue they could use and how to approach specific patients when discussing tobacco cessation. They also liked the idea of courses where they were given sample dialogues and an opportunity to practice them.

In offering suggestions, the dental hygienists' responses included:

- "...you have to continue to learn. There's always going to be new methods of doing things...."
- "A workshop where you actually do it, not just sit down and listen to a lecture..."
- "...courses like the one we sat through today are perfect, the pictures are vital, you can see them..."
- "I learn more by talking to other people...how would she say it, versus the way I say it...getting together as hygienists and sharing how we all do it is really helpful."

Barriers to OPC screening exams

The dental hygienists from both groups identified several barriers to performing OPC exams.(Figure 2) First, a financial barrier was suggested. Many of the dental hygienists came from rural, low-income areas where patients had little if any money to spend on dental and or medical expenses that are not covered by insurance. Several of

the dental hygienists suggested the panoramic radiograph as a helpful tool when detecting advanced cancerous lesions of the jaws. However, most insurance companies will only cover this procedure once every 5 years. The same barrier was mentioned in the use of ViziLite® and Oral CDx®. Insurance often will not cover these tests, and the participants found many patients did not have money to cover extra diagnostic tests. In addition, it was suggested that these tests only give reason to refer the patient for a biopsy, and again, in some situations, the patient will end up paying more money to have a surgical biopsy to determine the pathological diagnosis.

Another barrier mentioned by several of the dental hygienists was a lack of support from the dentist. In some situations, the dental hygienist is the only one encouraging the patient to have a biopsy, and the patient doesn't always perceive the urgency without the support or encouragement from the dentist as well.

One dental hygienist felt that having more time just for the health history assessment would be useful in the early detection of oral cancer. When asked if they were performing a comprehensive health assessment including assessment of alcohol and tobacco use, for every patient, all of the participants agreed they were doing it. In addition, most of them reported that it was rare for a dentist to do a thorough review of the health history. Most of the dentists, if assessing the health history, were reported to do so only for new patients. At subsequent visits, it was usually only the dental hygienist performing such an assessment.

Other barriers mentioned were in regards to the native language, ethnicity and personality of the patient. The dental hygienists explained that some patients are just harder to approach and talk with than others.

Barriers to Tobacco Cessation

As with oral cancer screenings, the participants identified several barriers with providing tobacco cessation counseling.(Figure 3) Some felt it was easier to talk to or counsel patients who were using spit tobacco as opposed to smoking, because smoking is more widely accepted. As with the previous question, many of the participants in both groups felt the patient's disinterest or lack of desire to quit was a barrier, especially when the patient had been using tobacco for many years. A few of the dental hygienists went further and suggested that in some areas of North Carolina, tobacco use is so common and mainstream, it is difficult to persuade a patient to quit. One participant discussed the move toward smoke-free environments on some hospital campuses which prohibit smoking indoors as well as outdoors on any of the grounds or parking areas included in the hospital complex. She expressed a desire for North Carolina to follow suit in other public locations such as universities and public schools.

As with OPC screenings, a couple of the participants felt that the personality of the patient could sometimes be a barrier. Some patients don't want to talk, and therefore it is difficult to get them to converse about quitting. In addition, some of the younger participants felt age was a barrier. Many reported difficulty in getting their older patients to take them seriously when trying to inform them of risks or when encouraging them to quit.

Another frequently reported barrier was the lack of written materials or resources to give the patients. One participant reported that her patient showed interest in using an over the counter product, but both she [the hygienist] and the dentist were unsure what product was best for the patient, and didn't know what to prescribe. A couple of others

reported that they were timid to bring it up without having statistics to give the patient. In addition to having statistics, many of the participants thought they would feel more confident if they could hand interested patients a card with a phone number or written program to follow. 1-800-Quit cards were specifically mentioned as a useful tool when helping patients with tobacco cessation.

A barrier that came up with younger patients using tobacco was that of the parents influence on their behavior. They are setting the example and sometimes even giving the cigarettes or smokeless tobacco to the child.

At the conclusion, the dental hygienists were asked what they felt was the most important thing they could do to help control oral cancer. The most common answer stated was education. Most felt they had a responsibility to educate patients about risk factors in order to help the patient help him or herself. One dental hygienist specifically stated, "I want my patients to help themselves...my commitment is to educate them..."

Their comments led to a discussion of the value of participation in oral cancer education in the community as well as in the private practice setting, and education to improve overall health, not just oral health. A few stated the importance of involvement in education for the entire dental team. Some expressed frustration as they were the only one in their practice promoting oral cancer awareness, and without support from the dentist, or even other team members, the patient may not take it seriously.

DISCUSSION

Focus group research is about listening and then being thoughtful and systematic about the information that has been shared. When used appropriately, the information gained from focus groups can benefit not only those who participated but also those who share the information after the fact.⁶⁹ Thoughts and opinions shared during focus groups can augment quantitative research in providing insight into a given topic. More insight is gained depending on the number of focus groups held.⁶⁹ One potential weakness of this study may be that only two focus groups were held. More focus groups may have further validated the themes and barriers that arose during this study. Furthermore, while participants in this study seemed to be very candid in expressing their opinions and practices, one cannot be sure if the views expressed in the focus groups would be the same as those expressed by an individual hygienist unaware of other colleagues' comments. The use of personal interviews with a separate group of dental hygienists, addressing the same topics discussed in these focus groups, could help triangulate the study. In doing so, one could be sure that themes and barriers were not necessarily determined by a group setting.

The first focus group was held following a tobacco cessation course as well as a pathology course, and some of their comments refer back to these specifically when answering prompt questions. This introduces a potential bias, and may have had some influence on opinions shared in the first group. However, similar views arose in the

second group, such that themes and barriers seemed to be the same among both focus groups rather than significantly influenced by the prior CE course content.

Finally, one must be careful about extrapolating these findings outside of North Carolina. The majority of dental hygienists in this study had only practiced under North Carolina's state practice act in communities within the state. The comments from dental hygienists in other states may vary slightly due to variations in practice acts, as well as patient populations.

Regardless of previously mentioned weaknesses and bias, the views and opinions shared in these focus groups offer a strong supplement to previous research and literature in designing educational models regarding the control of OPC in the state of North Carolina and possibly in other geographic areas. The randomized mail survey conducted by Ashe *et al*^{26, 27} provides quantitative information on opinions and practices of NC dental hygienists regarding knowledge and assessments of OPC risk factors, opinions and practices regarding OPC exams, and educational counseling related to the prevention of OPC. Combined, these two studies provide a clear justification for improved educational methods regarding OPC prevention and early detection.

In the field of dental hygiene, training and treatment are centered on the prevention of disease and the recognition of unhealthy circumstances. In controlling mortality rates related to OPC, prevention and recognition are needed. These services fit perfectly in the dental hygiene model of care. Participants in the current study exhibited strong beliefs that as dental hygienists, they are in an important position to help increase awareness among their patients and to help motivate patients to change. They also stated

patient education to be of the utmost importance in their role as an oral healthcare professional.

The findings suggest the importance of developing relationships of trust between patient and provider, in order to increase perceived value of the dental hygiene appointment and services provided therein. The experiences shared by participants support the concept that patients are more open with the dental hygienist regarding willingness to change behaviors that place them at high risk for oral cancer when a relationship of trust with the practitioner has been established. When patients believe the provider is genuinely concerned about them, they are also more likely to listen to educational information regarding their health. Study participants shared experiences of being more comfortable with physicians, dentists and even dental hygienists who remembered their names and personal details about them. Documentation of personal information helps remind the practitioner of specific details shared by the patient. This can even include opinions and changes in life situations shared during interventions to address tobacco use and/or alcohol abuse.

Time was reported as a potential barrier that determined whether or not the dental hygienist was providing risk factor counseling and/or OPC screenings. Another part of exhibiting genuine concern for the patient means taking time to address his or her needs. Not taking time to screen for OPC or address a patients' health history may convey that the provider is only interested in the current status of the teeth; when actually, dental hygienists have training to recognize that the current status of the mouth can reflect the current health of the entire body. If patients understand the dental hygienist's role in prevention of oral diseases in order to maintain overall health, perhaps they would be

more likely to trust the dental hygienist when suggestions for changes regarding the prevention of OPC are made. In addition, they might be more ready to share their desire and willingness to address behaviors that place them at risk for oral cancer.

Focus group participants performing regular OPC exams stated that many returning patients were very familiar with the process and could recognize the service when it was performed. It seems likely dental hygienists can increase awareness simply by providing regular OPC exams. In addition, when the provider takes the time to explain and educate the patient about the exam, the patient becomes more familiar with the service, and perhaps in time, will come to expect, value, and demand that service during the course of a preventive re-care appointment. Also to consider, time may become less of an issue as the patient becomes more educated.

The focus group participants believed patient education was a valuable part of their role as a dental hygienist in addressing issues related to OPC. Research on adults' knowledge and perceptions of OPC and associated risk factors supports this need for oral health professionals to educate their patients regarding such topics.^{35, 54, 55} Unfortunately research also reports deficiencies in dental hygienists' practices regarding prevention and detection of OPC.^{20, 22-27}

Dental hygienists could and should play a major role in the control of OPC, and therefore it is imperative that they be knowledgeable and comfortable in providing OPC exams as well as risk factor counseling. Dental hygiene programs have a responsibility to ensure they are providing adequate time and education regarding these practices. However, it seems apparent from this study as well as in the survey of NC dental hygienists^{26, 27} and previous studies in Maryland^{20, 22, 23} that there is a pronounced desire

and need for CE on the topic of oral cancer detection and prevention. Specifically, a request for “hands-on” courses where they are given opportunities to practice OPC exams and practice sample dialogues that could be used in risk factor counseling situations. Participants from this study also emphasized the importance of photographs displaying actual malignancies when attending CE courses.

Previous studies confirm dental hygienists’ deficits in knowledge and abilities in providing OPC exams and risk factor counseling as well as those of dentists.^{18, 20-28} Most states require a minimum number of CE hours per year to maintain licensure.⁷⁰ In North Carolina, 6 hours of CE must be directly related to patient care. Although, the survey of NC dental hygienists conducted by Ashe *et al* revealed that almost 10% of respondents had never dedicated any of these CE hours to a course regarding oral cancer, 96% expressed interest in attending such a course.²⁷ New York recently mandated dentists’ attendance at a 2 hour CE course on oral health effects associated with tobacco and tobacco products.⁷¹ No such mandate exists for dental hygienists in the US, but perhaps states could follow suit in requiring that a specified number of dental hygiene CE hours be dedicated to further training in the area of OPC control.

Finally, continued training in early detection and prevention of oral cancer could help address some of the barriers mentioned by participants in this study. Some of the dental hygienists expressed frustration that they were the only team member focused on OPC screenings and/or prevention. As dental hygienists and dentists become more focused and confident in early detection and prevention, they may be more likely to ensure time is provided for such services and support each other in such practices. Diversity issues such as language and cultural barriers could be addressed in CE courses

giving dental hygienists skills to help them feel confident in developing relationships with all of their patients regardless of personality or culture.

CONCLUSIONS

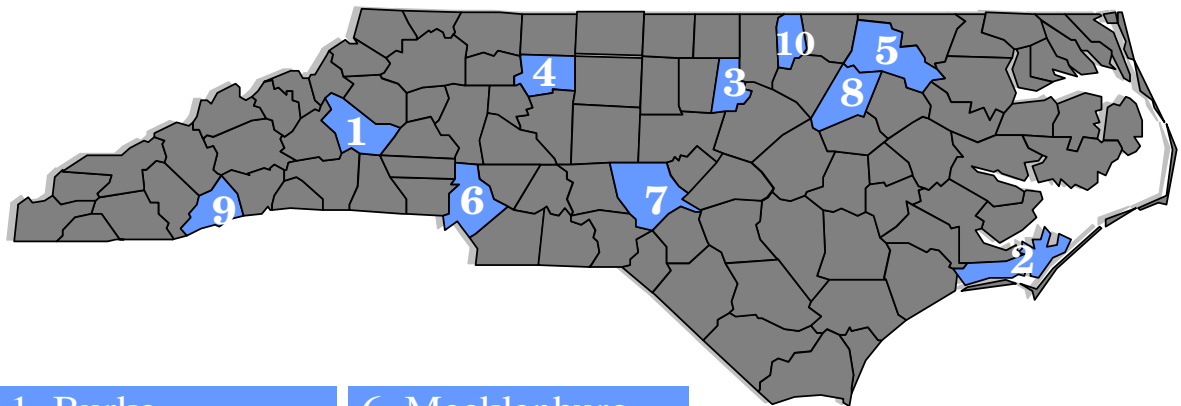
The views and opinions shared in this study offer a strong supplement to previous research and literature. This study aimed to provide further insight as to why dental hygienists in the state of North Carolina are or are not providing services that contribute to the prevention and early detection of OPC. The findings from this study as well as from other studies 26, 27, 29, 72 provide information to initiate the development of a state model to help increase awareness among dentists and dental hygienists regarding the importance of risk factor assessment and regular performance of oral cancer screenings for every patient. Combined, these studies provide a clear justification for improved educational methods that will increase awareness regarding OPC prevention and early detection among oral healthcare providers.

It is important to begin addressing barriers related to OPC screenings and risk factor counseling. Improved educational models in schools as well as continuing education courses can address some of these barriers as well as move the profession forward in making a paradigm shift where providing these services is no longer just an additional benefit, but instead, the expectation of oral health professionals and their patients.

Table 1
Demographic Information of Participating
Dental Hygienists

Dental Hygienists	Mean	Range
Years in practice	14.5	1 – 35
Hours worked (week)	31.8	16 – 40
Approximate % of patients using tobacco	42%	3% – 96%

Figure 1
North Carolina Counties Represented by Focus Group Participants



1. Burke	6. Mecklenburg
2. Carteret	7. Moore
3. Durham	8. Nash
4. Forsyth	9. Transylvania
5. Halifax	10. Vance

Figure 2
Barriers to OPC Screening Exams

Barriers	Quote
1. Money/Insurance	“He [dentist] wants an FMX and a panorex; insurance won’t cover all of that; and that helps to detect [oral cancer]...”
2. Time	“I’m sorry, time was an issue, and I did not do it there [private practice] as regularly as I do it now [hospital setting],...”
3. Insufficient Support From Dentist	“Unless the dentist is behind you, he/she [patient] is just going to think, ‘oh, it’s just a white spot, and I’m not going to worry about it.’”

Figure 3
Barriers to Tobacco Cessation Counseling

Barriers	Quote
1. Lack of Patient Interest	“In my experience, zyban doesn’t even work if they don’t want to quit.”
2. Lack of Patient Education Materials	“I want my patient to help themselves... my commitment is to educate them...”
3. Smoking Parents of Adolescents	“...when the person that gave them cigarettes is sitting out in the waiting room and is going to light up with them when they leave...”
4. Provider – Patient diversity In age, ethnicity and culture	“I’m trying to preach to a 45 year old patient ... They look at me like, ‘what do you know?’”

APPENDIX

Oral Cancer Prevention and Early Detection Focus Groups Moderator's Guide

July 31, 2006

Objectives (Do NOT Review with group)

To be able to describe participants':

- Perceptions and practices of oral cancer screening exams
- Comfort level with oral cancer screening exams
- Perceptions of barriers to providing oral cancer screening exams
- Perceptions and Practices with tobacco, alcohol and sun exposure prevention interventions.
- Perceptions of barriers to performing tobacco cessation in the dental office
- Comfort level with tobacco cessation approaches
- Preferred educational approaches

Room Set-Up

- Consent forms
 - Demographic sheet
 - Paper for note taking; Markers
 - Recording equipment
-

I. Introduction and Ground Rules (5 minutes)

Welcome and thank you for coming

Facilitator and Note Taker Introductions

Background:

This Focus group research activity is sponsored by a NIH grant to develop a NC state model for improved Oral cancer prevention and early detection. We will be discussion particularly the topics of oral cancer screening and tobacco/alcohol prevention and cessation.

Introductory Statement/Purpose

As you may already know, NIH conducts research and education programs meant to improve the health of Americans. We're planning to use the opinions and information you give us tonight to help develop better professional health education programs in NC to reduce oral cancer incidence and mortality. This means we want to get your honest input. We want you to share as much information as possible with us this evening, but if there are any questions you prefer not to answer, that's fine.

Confidentiality

I want to assure you that everything we discuss here today is confidential. The things you say may be put in a summary of this discussion, but there will be no way to identify who said what, and your names will not be used anywhere.

Note taking and Recording

We will be taking notes and recording the discussion so that we can accurately report what was said. Is that OK with everyone?

(Note: If this is not acceptable to any individuals, we will request that they not participate; recording and note taking is important)

Consent form.

Please take a moment to review and sign the consent form for this research activity that we have passed out to you.

Ground Rules

1. Don't be concerned with having right or wrong answers to the questions.
2. Don't worry if you don't know something.
3. We welcome and respect different points of view.
4. All ideas are good ideas.
5. If you are uncomfortable with a question, feel free to pass.
6. We have quite a few things to talk about; at times we may need to stop the discussion in order to move on; we apologize for that in advance.
7. We really need your honest feedback.
8. Please speak one at a time so that everyone is heard.
9. Please do not share any information you hear in this group with anyone outside the group.
10. Any questions before we get started?

II. Ice-Breaker (5 minutes)

Now I'd like to go around the room and ask each of you to tell me your first name, what part of NC you live in, and why you decided to come to this focus group.

III. Perceptions About Oral Cancer Early Detection: (15 min)

Question 1

In what situations do you perform oral cancer screening examinations? (*Probe: Routinely vs. periodically? Only for high risk patients? Who do you consider to be at high risk for developing oral cancer?*)

Question 2

Are you comfortable with your level of training in oral mucosal examination and creating a differential diagnosis for oral malignancy? If not, how could your comfort level be improved?

Question 3

Do you perceive any barriers in providing oral cancer screening examinations?

IV. Perceptions About Oral Cancer Prevention: (20 min)

Question 4

Do you perform a comprehensive health assessment for each patient? Does this assessment include tobacco and alcohol use?

(*Probe: Do you **ask** patient every patient about their tobacco use? If so, do you **advise** every patient to quit? What health risks of tobacco do you discuss with your patients?*)

Question 5

In what situations do you provide tobacco cessation counseling?

(*Probe: Do you **assess** their readiness to quit? Do you **assist** with quitting (set quit date, refer to 1-800-Quit-Now, consider pharmacotherapy)? Do you **arrange** for follow-up?)*

Question 6

What barriers, if any, do you perceive in providing tobacco cessation counseling?

Question 7

Are you comfortable with your level of training in tobacco prevention and cessation?
If not, how could your comfort level be improved?

V. General (5 minutes)

Question 8

Considering our discussion, what is the most important thing you can do to help your patients prevent oral cancer?

That's all the questions we have. Thank you for all of the great information you've given us. This will all be really helpful to us as we plan research and education programs.

VI. Exit Questionnaire (5 minutes)

The final thing we would like you to do this evening is to answer a few questions about yourselves on the sheet that Carrie is handing out. Please do not put your name on the page. Once that is completed we are finished and we will give each of you your \$50.00 check.

Thank you!

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